

## **FREQUENTLY ASKED QUESTIONS**

### **Bald Eagle Lead Exposure in the Upper Midwest**

#### **How are bald eagles exposed to lead?**

Lead is a readily available and inexpensive metal traditionally used in most ammunition (single projectile bullets, shotguns shells, slugs, muzzleloader balls and sabots, etc.) Lead is a “soft” metal which breaks apart or “fragments” into small particles when it hits tissue or bone in wild game. The fragmentation dissipates the bullet’s energy throughout the animal. Hunters typically discard unwanted game parts, like gut piles, in the field. These discarded parts may contain lead fragments which are eaten by eagles and other wildlife.

#### **How does lead affect bald eagles?**

Strong acids in the digestive tract of eagles can dissolve lead fragments allowing lead to enter the eagle’s blood stream. Once in the blood stream lead is transported to internal organs including the liver. Lead is a neurotoxin and small amounts of lead ingested by eagles may cause muscle paralysis, organ failure, weight loss, behavioral changes, or impaired reproduction. Depending on the amount of lead ingested, these effects may occur quickly or can extend for several weeks resulting in death by starvation or trauma.

#### **How much lead is contained in shotgun slugs and muzzleloader bullets used for deer hunting?**

A single 12-gauge shotgun slug may contain 27.3 grams (27,300 milligrams) of lead. Laboratory studies show that an amount of lead as small as 82.5 milligrams can be lethal for a bald eagle. This lethal amount represents less than one percent of a single 12-gauge slug, a single 20-gauge slug, or a single muzzleloader bullet.

#### **What are the alternatives to lead ammunition?**

Several ammunition manufacturers produce non-lead ammunition for nearly every type of firearm, bullet and shot. Non-lead ammunition is made with various metals including bismuth, zinc, tungsten and copper. These metals are harder than lead and typically don’t fragment.

#### **Is non-lead ammunition as effective as lead ammunition when used for deer hunting?**

Lead slugs typically fragment when they encounter resistance such as hitting tissue or bone which results in loss of bullet velocity and reduced penetration. Non-lead ammunition is designed to expand without fragmenting thus producing a larger bullet diameter that increases tissue damage, penetration and shock to the animal’s system that usually results in a large blood trail or immediate kill.

#### **What is the cost comparison and availability of lead versus non-lead ammunition used for deer hunting?**

The cost and availability of lead versus non-lead ammunition varies depending upon where it is purchased. Traditional soft point lead ammunition is the least expensive averaging about \$1.00/shotgun slug. High performance lead slugs range from \$2.00 - \$4.00/slug, depending upon the retailer. Non-lead ammunition is made from several metals with variable prices depending on the metal used by the manufacturer. Popular copper slugs range from \$2.00 - \$4.00/slug, depending upon the retailer.

**When purchasing ammunition, how do I know that it does not contain lead?**

Many types of ammunition contain a lead core with an outer non-lead jacket, so you'll need to look closely at the ammunition box label. Usually, the box label identifies non-lead ammunition as solid copper or other metal. If you don't see such a label, then look for a "lead warning" label that is required to be printed on the outside or inside of a box that contains lead.

**Bald eagle populations are increasing, what is the concern?**

From our study of 168 bald eagles, 48% had detectable levels of lead, 21% had lethal levels. These high percentages are of concern for the long term population of eagles, for other scavenging wildlife, and for the overall health of the environment.